REMARKS

Claims 1, 2, 11 and 13-25 are pending in this application. By the Office Action, claims 1-15 are rejected under 35 U.S.C. §102 and §103. By this Amendment, claims 1, 11, 13 and 15 are amended; claims 3-10 and 12 are canceled; and claims 16-25 are added. Support for the amendments and new claims can be found in the claims as originally filed. No new matter is added.

I. Rejections under §102

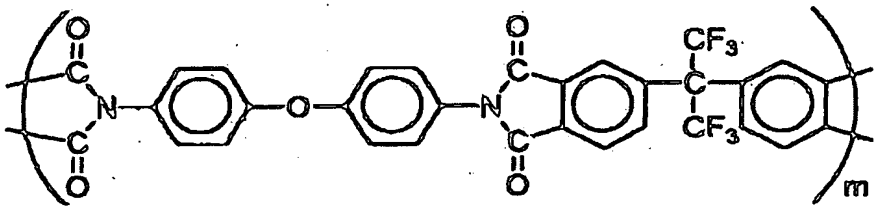
A. Okinoshima I

The Office Action rejects claims 1-15 under 35 U.S.C. §102(b) over U.S. Patent No. 5,441,845 to Okinoshima et al. ("Okinoshima I"). Applicants respectfully traverse this rejection as to pending claims 1, 2, 11, and 13-15.

Amended claim 1 is directed to a liquid crystal alignment agent used in a method for alignment of liquid crystal molecules that form a liquid crystal alignment film comprising irradiating a thin alignment film formed on a substrate with polarized light or electron rays and aligning the liquid crystal molecules on the substrate without any rubbing treatment. The liquid crystal alignment agent comprises a polymer compound selected from the group consisting of polyurethane and a polyurea comprising a structure selected from the group consisting of the general formulae (1) – (7). Okinoshima I does not teach such an agent.

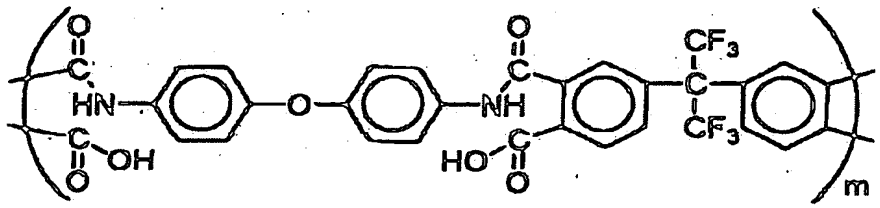
Okinoshima I describes a photosensitive resin composition that includes a polyimide precursor and a photosensitive diazoquinone compound (col. 2, lines 23-51). Okinoshima I states that its composition exhibits "good sensitivity on irradiation with light." (Col. 2, lines 61-62). The teachings of Okinoshima I further limit the type of light irradiation to "light rays such as visible light, UV light and the like." (Col. 8, lines 53-54). The exemplary teachings utilize a "UV ray from a super high pressure mercury lamp of 250 W." (Col. 12, lines 9-10).

In the composition of Okinoshima I, a polyimide compound is used that is represented by formula (a-1):



(a-1)

See Okinoshima I at cols. 9-10, lines 4-12. Although not expressly set forth in Okinoshima I, the polyimide precursor that would be expected to have been used to derive the compound of formula (a-1) would be the compound of formula (a-1-2):



(a-1-2)

In contrast to the polyimide compounds of Okinoshima I, independent claim 1 specifically requires that the polymer compound be selected from the group consisting of polyurethanes and polyureas. Okinoshima I does not teach the use of polymer compounds that are polyurethanes or polyureas, as claimed.

Thus, claim 1, 2, 11 and 13-15 are not anticipated by Okinoshima I. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

B. Endou I

The Office Action rejects claims 1-7, 10 and 14-15 under 35 U.S.C. §102(e) over U.S. Patent No. 6,274,695 to Endou et al. ("Endou I"). Applicants respectfully traverse this rejection.

Endou I is a U.S. Patent, which on its face is indicated to have a §102(e) date of November 1, 1999. However, the present application is itself a National Stage of a PCT

application, filed on August 25, 1999. Accordingly, the present application has an effective U.S. filing date prior to the §102(e) prior art date of Endou I. Endou I is thus not prior art to the present application, and the rejection must be withdrawn.

Furthermore, Endou I is derived from a PCT application, which published on November 5, 1998. However, the present application claims priority to Japanese patent application No. 10-240491 filed August 26, 1998. Applicants have already filed an accurate translation of the priority application, on May 12, 2003. Filing of the accurate translation of the priority application perfected Applicants' claim for priority. Accordingly, for this additional reason, Endou I is removed as prior art to the present application, and the rejection must be withdrawn.

Thus, claims 1, 2 and 14-15 are not anticipated by Endou I. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection.

II. **Rejection under §103**

The Office Action rejects claims 1-15 under 35 U.S.C. §103(a) over U.S. Patent No. 6,025,895 to Yazaki et al. ("Yazaki") in view of either Okinoshima I or U.S. Patent No. 5,292,619 to Okinoshima ("Okinoshima II"). Applicants respectfully traverse the rejection as to pending claims 1, 2, 11 and 13-15.

The Office Action asserts that Yazaki describes a liquid crystal display that uses a polyimide alignment film reportedly administered without a "rubbing treatment." The Office Action recognizes that Yazaki does not describe any particular composition of its alignment film and therefore Yazaki fails to describe a polymer having the specific chemical structure as claimed. The Office Action relies on Okinoshima I and/or Okinoshima II for teaching polyimide film materials that do not require rubbing, and states that such polyimides fall within the formulas of claim 1. The Office Action concludes that it would have been obvious

for one of ordinary skill in the art to utilize the Okinoshima I and II compounds in the device or method as claimed. Applicants respectfully disagree.

Yazaki describes a liquid crystal display assembly that includes a polyimide alignment film on a pair of substrates, wherein rubbing treatment is not administered. Between the substrates, Yazaki applies a polymer dispersion liquid crystal in which liquid crystal and polymer are in a state of "mutual orientation dispersion" (Abstract). Yazaki prefers that the substrate surfaces not undergo rubbing treatment so that the liquid crystal can remain randomly oriented roughly parallel to the substrate surface (col. 3, lines 1-4). However, Yazaki is distinct from the claimed invention, and is improperly combined with the secondary references.

First, Yazaki is cited as teaching polyimide polymers. However, as described above, the rejected claims require that the polymer compound be selected from polyurethane and polyurea polymers. Yazaki does not teach or suggest substituting a polyurethane or polyurea polymer for the polyimide polymer used therein.

Second, Yazaki does not teach alignment by irradiation with UV light, as claimed. Yazaki merely describes a technique comprising irradiating a mixed material of a liquid crystal and a polymer precursor. However, Yazaki does not describe that the irradiation gives a similar effect as a rubbing treatment, and thus does not tech or suggest that the results obtained in Yazaki are the same as the results obtained in the claimed invention. Thus, Yazaki fails to teach or suggest at least (1) an alignment film, or (2) irradiating that alignment film with UV light. Yazaki nowhere teaches or suggests that the alignment film irradiated with a light is used for aligning liquid crystal molecules.

Third, any combination of Yazaki and the secondary references is improper. The only motivation for one of ordinary skill in the art, from the teachings of Yazaki, would have been limited to the use of a polyimide film, without a rubbing treatment, to maintain randomly

oriented crystal molecules. Yazaki's teachings are not directed to a method for the alignment of liquid crystal molecules as claimed.

Fourth, even combining Yazaki with one or more of Okinoshima I or Okinoshima II would not have provided the claimed invention. As described above, Okinoshima I teaches a polyimide polymer, but that polyimide polymer is different from the polyurethane and polyurea polymers required in the claimed invention. Okinoshima II likewise also teaches photosensitive compositions containing a polymer having a polyamic acid and a polyimide structure, which polymers are also different from the polyurethane and polyurea polymers required in the claimed invention. Nowhere does any of Yazaki, Okinoshima I or Okinoshima II teach or suggest that the different disclosed polymers of those references could and should be changed to use the specific polymers of the claimed invention.

One of ordinary skill in the art would have had no motivation to substitute the polymer material described in Yazaki for anything taught or suggested in Okinoshima I or Okinoshima II, or to change the polymer materials used in any of Okinoshima I or Okinoshima II and to substitute that new polymer compound for the polymer of Yazaki. The cited references do no teach or suggest the use of any agent in a method for the alignment of liquid crystal molecules with polarized light as claimed. Moreover, the Office Action has failed to provide any reason or suggestion to make such a substitution.

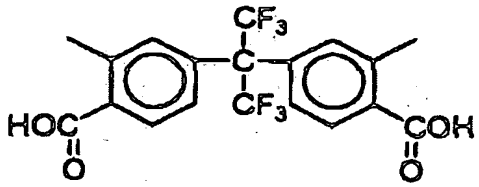
For at least these reasons alone, Yazaki, Okinoshima I and Okinoshima II, alone or in combination would not have rendered obvious the claimed liquid crystal alignment agent. Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection.

III. **New claims 16-25**

New claims 16-25 are added to further define the claimed invention.

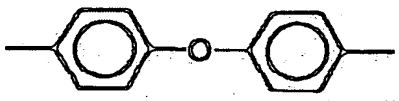
New claims 16, 17, 20, 22 and 24 are patentable over Okinoshima I. Claim 16 requires that the polymer compound fulfills all of the conditions (A), (B), and (C). In

Okinoshima I, the polyimide compound (a-1) is derived from a polyimide precursor (a-1-2), as described above. Further, the polyimide precursor (a-1-2) corresponds to a compound having a group of formula (18) in claim 16, where R^{10} is the group:



However, claims 16, 17, 20, 22 and 24 do not encompass compounds where R^{10} corresponds to the above compound of the polyimide precursor (a-1-2) of Okinoshima I. Accordingly, these claims are not anticipated by Okinoshima I.

Likewise, new claims 18, 19, 21, 23 and 25 are patentable over Okinoshima I. Claim 18 requires that the polymer compound fulfills all of the conditions (A), (B), and (C). In Okinoshima I, the polyimide compound (a-1) is derived from a polyimide precursor (a-1-2), as described above. Further, the polyimide precursor (a-1-2) corresponds to a compound having a group of formula (42a) in claim 18, where R^{27} is the group:



However, claims 18, 19, 21, 23 and 25 do not encompass compounds where R^{27} corresponds to the above compound of the polyimide precursor (a-1-2) of Okinoshima I. Accordingly, these claims are not anticipated by Okinoshima I.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

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